

1 What is Claimed is:

2 1. A contact tonometer for sensing intra-ocular pressure (IOP) of an eye
3 comprising:

4 (a) a contact surface for making contact with a surface of said eye;

5 (b) a micro-electro-mechanical system (MEMS) device connected to said
6 contact surface wherein said MEMS device produces an electrical
7 signal corresponding to the force applied by said contact surface to
8 said surface of said eye when said surface of said eye is contacted by
9 said contact surface;

10 (c) an electronics unit for receiving said electrical signal and converting
11 said electrical signal to an IOP signal that is representative of the IOP
12 of the eye;

13 (d) a display for receiving the IOP signal from the electronics unit and
14 displaying information that is representative of the IOP of the eye; and

15 (e) a power source for supplying electrical power to said electronics unit
16 and said display.

17 2. The contact tonometer of claim 1 further comprising an activation switch
18 connected to said power source.

19 3. The contact tonometer of claim 1 further comprising a membrane disposed at
20 the contact surface and positioned between the contact surface and the surface of the
21 eye.

22 4. The contact tonometer of claim 3 wherein the membrane is non-reactive and
23 bio-compatible with the surface of the eye.

- 1 5. The contact tonometer of claim 4 wherein the membrane is disposable.
- 2 6. The contact tonometer of claim 1 wherein the power source is comprised of
3 batteries.
- 4 7. The contact tonometer of claim 1 wherein the power source is comprised of
5 common household electrical power provided through a power line.
- 6 8. The contact tonometer of claim 1 wherein the MEMS device and the
7 electronics unit are formed together in an integrated circuit.
- 8 9. The contact tonometer of claim 1 wherein the MEMS device, the display and
9 the electronics unit are formed together in an integrated circuit.
- 10 10. The contact tonometer of claim 1 wherein the electronics unit comprises a
11 microprocessor.
- 12 11. The contact tonometer of claim 1 wherein the electronics unit comprises an
13 application specific integrated circuit.
- 14 12. The contact tonometer of claim 1 wherein the MEMS device is in direct
15 contact with the contact surface.
- 16 13. The contact tonometer of claim 1 further comprising a first housing member
17 capable of being attached to a human finger for containing the contact surface and the
18 MEMS device.
- 19 14. The contact tonometer of claim 13 further comprising an activation switch
20 connected to said power source.
- 21 15. The contact tonometer of claim 13 further comprising a membrane disposed
22 at the contact surface and positioned between the contact surface and the surface of
23 the eye.

1 16. The contact tonometer of claim 15 wherein the membrane is non-reactive and
2 bio-compatible with the surface of the eye.

3 17. The contact tonometer of claim 16 wherein the membrane is disposable.

4 18. The contact tonometer of claim 13 wherein the power source is comprised of
5 batteries.

6 19. The contact tonometer of claim 13 wherein the power source is comprised of
7 common household electrical power provided through a power line.

8 20. The contact tonometer of claim 13 wherein the first housing member further
9 contains the electronics unit.

10 21. The contact tonometer of claim 20 wherein the MEMS device and the
11 electronics unit are formed together in an integrated circuit.

12 22. The contact tonometer of claim 13 wherein the electronics unit comprises a
13 microprocessor.

14 23. The contact tonometer of claim 13 wherein the electronics unit comprises an
15 application specific integrated circuit.

16 24. The contact tonometer of claim 13 wherein the MEMS device is in direct
17 contact with the contact surface.

18 25. The contact tonometer of claim 13 further comprising a second housing
19 member coupled to said first housing member and capable of being attached to a
20 human hand for containing the display.

21 26. A hand-held contact tonometer for sensing intra-ocular pressure (IOP) of an
22 eye comprising:

23 (a) a contact surface for making contact with a surface of said eye;

1 (b) a micro-electro-mechanical system (MEMS) device connected to said
2 contact surface wherein said MEMS device produces an electrical
3 signal corresponding to the force applied by said contact surface to
4 said surface of said eye when said surface of said eye is contacted by
5 said contact surface;
6 (c) an electronics unit for receiving said electrical signal and converting
7 said electrical signal to an IOP signal that is representative of the IOP
8 of the eye;
9 (d) a display for receiving the IOP signal from the electronics unit and
10 displaying information that is representative of the IOP of the eye; and
11 (e) a power source for supplying electrical power to said electronics unit
12 and said display.

13 27. The hand-held contact tonometer of claim 26 further comprising a housing
14 member capable of being hand-held for containing the contact surface, the MEMS
15 device, the electronics unit and the display.

16 28. The hand-held contact tonometer of claim 27 further comprising a membrane
17 disposed at the contact surface and positioned between the contact surface and the
18 surface of the eye.

19 29. The hand-held contact tonometer of claim 28 wherein the membrane is non-
20 reactive and bio-compatible with the surface of the eye.

21 30. The hand-held contact tonometer of claim 29 wherein the membrane is
22 disposable.

23 31. The hand-held contact tonometer of claim 27 wherein the power source is

1 comprised of common household electrical power provided through a power line.

2 32. The hand-held contact tonometer of claim 27 wherein the MEMS device and
3 the electronics unit are formed together in an integrated circuit.

4 33. The hand-held contact tonometer of claim 27 wherein the MEMS device, the
5 display and the electronics unit are formed together in an integrated circuit.

6 34. The hand-held contact tonometer of claim 27 wherein the electronics unit
7 comprises a microprocessor.

8 35. The hand-held contact tonometer of claim 27 wherein the electronics unit
9 comprises an application specific integrated circuit.

10 36. The hand-held contact tonometer of claim 27 wherein the MEMS device is in
11 direct contact with the contact surface.

12 37. The hand-held contact tonometer of claim 27 wherein the power source is
13 comprised of batteries.

14 38. The hand-held contact tonometer of claim 37 wherein the housing further
15 contains the power source.

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